

REMARKS

Claims 1-53 are pending in the application.

Claims 1-53 stand rejected.

Claims 1, 21, 34, 39 and 49 are objected to.

Claims 1, 12, 15, 21, 25, 26, 34, 39, and 49 have been amended. Support for the amendments to claims 1, 21, 34, and 49 can be found, at least, in paragraphs 22, 25, and 26 of the specification. Support for the amendment to claims 12 and 43 can be found in paragraph 39 of the specification. Support for the amendment to claim 39 can be found, at least, in originally presented claim 5.

Claim Objections

Claims 1, 21, 34 and 49 have been objected to. The Office Action asserts that an application/intended use/purpose should be recited in the preambles of these claims. Office Action, p. 2. Applicant notes that there is no legal requirement that a claim include “an application/intended use/purpose” in its preamble and that any such statement within the preamble “is not considered a limitation and is of no significance to claim construction.” MPEP §2111.02, *citing Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999). Since the mere inclusion of a purpose or intended use is not required and does not present any claim limitation, Applicants respectfully assert that these claims are proper as presented.

Claim 39 has been objected to because it is a duplication of claim 38. Applicants have amended the claim so that claim 39 is no longer a duplicate of claim 38. Applicants thank the Examiner for calling attention to this unintentional error in the claim.

Rejection of Claims under 35 U.S.C. §112

Claims 12, 15, 16, 30, 31, 43, 45, 46, 51 and 53 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

With respect to claims 12, 15, 39, and 43, the claims have been amended to no longer include the words “likely” or “likelihood.” Applicants assert that these claims are clear and definite.

With respect to claims 16, 31, and 46, the Office Action has stated that “it is not clear as to how a longer wire has less delay than a shorter (removed) wire.” Applicants note that an example of a scenario in which a longer wire will have less delay than a removed shorter wire is provided in paragraphs 25 and 26 of the specification. Applicants respectfully assert that the corresponding limitation in claims 16, 31, and 46 is clear and definite.

With respect to claim 51, the phrase “could have been” is used to describe the size and/or orientation of the empty space included in the integrated circuit. Thus, the empty space has a size and/or orientation that would have allowed a shorter wire to be routed, through the empty space, between the nodes that are instead coupled by the new wire. Applicants therefore assert that the language “wherein the integrated circuit includes an empty space through which a shorter wire coupling the two nodes could have been placed during fabrication of the integrated circuit” is clear and definite.

Rejection of Claims under 35 U.S.C. §102

Claims 1, 3-21, 23-34, 36-51 and 53 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Doreswamy, et al., U.S. Patent No. 5,784,600 (Doreswamy). Applicants respectfully traverse this rejection.

Amended claim 1 recites: detecting a timing violation, caused by crosstalk, in a timing path included in an integrated circuit design; removing one of one or more wires included in the timing path, wherein the one of the one or more wires couples two nodes included in the integrated circuit design; and routing a new wire between the two nodes, wherein the new wire is longer than the removed one of the one or more wires, and wherein the new wire experiences fewer crosstalk effects than the removed one of the one or more wires.

Doreswamy describes systems that reduce clock skew by equalizing the length of wires carrying clock signals (e.g., see Doreswamy, col. 3, lines 53-63). In particular, Doreswamy introduces an automated method for adjusting the length of wires between clock buffers in adjacent stages of a network by specifying wire routes that include serpentine-shaped sections

(e.g., see Doreswamy, col. 4, lines 27-43). Thus, in Doreswamy, wires are lengthened by adding serpentine segments in order to equalize wire lengths and thus reduce clock skew.

In contrast to Doreswamy's method, which is focused on clock skew, the method of claim 1 involves detecting a timing violation, caused by crosstalk effects, in a timing path. In amended claim 1, a wire is removed and replaced by a new wire that experiences fewer crosstalk effects than the removed wire. These features are neither disclosed nor suggested in Doreswamy (Applicants note that the term "crosstalk" does not appear anywhere within Doreswamy). For at least this reason, amended claim 1 is patentable over the cited art. Claims 3-21, 23-34, 36-51 and 53 are patentable over the cited art for similar reasons.

Claim 1 also stands rejected under 35 U.S.C. § 102(b) as being anticipated by Tamarkin, et al., U.S. Patent No. 6,256,769 (Tamarkin). Applicants respectfully traverse this rejection.

Like Doreswamy, Tamarkin is focused on increasing wire length by adding serpentine segments (e.g., see Tamarkin, col. 3, line 48 - col. 4, line 7). Tamarkin creates serpentine segments within a routing path in order to make the routing path long enough to satisfy a minimum length routing rule.

The only reference to crosstalk in Tamarkin occurs in the paragraph describing circuit routing rules that might be contained in a database: "A typical database entry might include, for example, the signal name, the start and end pins, and the minimum and maximum lengths that a path between the start pin and end pin can have to meet the required timing for that signal. Other circuit rules can regulate the proximity of traces to one another (on the same or different layers) to prevent cross-talk, the direction of traces on different layers to prevent so-called 'wrong-way etch,' (e.g., a vertical etch on a horizontal layer, or vice versa), trace width (to control impedance), etc." Tamarkin, col. 6, lines 29-38. No teachings or suggestions for reducing crosstalk in the manner recited in claim 1 are provided within Tamarkin.

Thus, Tamarkin only teaches techniques for adjusting routing paths to satisfy minimum length routing rules. Tamarkin does not teach or suggest detecting a timing violation, caused by crosstalk, in a timing path, removing one of one or more wires in that timing path, and routing a new wire between the two nodes, where the new wire experiences fewer crosstalk effects than


the removed one of the one or more wires. For at least this reason, claim 1 is patentable over the cited art.

Rejection of Claims under 35 U.S.C. §103

Claims 2, 22, 35 and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over one or more of Doreswamy, et al., U.S. Patent No. 5,784,600 (Doreswamy) and Tamarkin, et al., U.S. Patent No. 6,256,769 (Tamarkin), in view of one or more of Beyne, et al., U.S. Patent Publication No. 2003/0060034 (Beyne) and Muddu, et al., U.S. Patent No. 6,353,917 (Muddu). Applicants traverse these rejections for at least the foregoing reasons provided above with respect to claim 1.

CONCLUSION

In view of the amendments and remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5087.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on <u>November 3, 2005</u> .	
	<u>11/3/2005</u>
Attorney for Applicant(s)	Date of Signature

Respectfully submitted,



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